Closing in on Closure

K Basins' ergonomic improvements win safety award

This is the story of the activities that won the AWB award.

Fluor Hanford has just been awarded a prestigious Workplace Safety Award by the Association of Washington Business (AWB), for ergonomic improvements made to help workers work more comfortably and safely in the K Basins. The aging K Basins present unique challenges for workers – the fuel and sludge are at the bottom of the basins under 20 feet of water while the workers using various tools are standing on grating above the water.

A new air vertical-balancer tool replaced an older tool. The new configuration helps put less strain on worker's wrists.

The K Basins Closure Project launched an ergonomic improvement effort for the unprecedented work to assist in providing workers with the best practices and the best tools (either by obtaining or fabricating the tools), to ensure safe working conditions. Fluor Hanford considered the tasks performed, the tools used, the environment in which the work was done, and the overall physical and psychological effects on employees. The involvement of employees and management led to a dramatic improvement in working conditions and a 90 percent reduction in injuries.

In an innovative move, Fluor hired an ergonomics/human factors specialist to observe conditions and formulate recommendations for four shifts covering 24 hours a day, seven days a week. The Spent Nuclear Fuel (SNF) Project (since reorganized into the K Basins Closure [KBC] Project) hired Denise Brooks in 2004. Her background includes 23 years in occupational safety in commercial nuclear and manufacturing industries. She took pictures and video of ongoing work and interviewed employees. She was struck by the uniqueness of the situation.

"Everything was oriented downward," Brooks said. "People were leaning over railings, using very long-handled tools, and performing repetitive actions in circumstances where lighting was often positioned at odd angles relative to the workers." Brooks and the workers, in cooperation with engineering and operations, and the project's safety council, came up with several ideas to improve the situation. "Tooling and processes should fit the people, not the other way around," said Brooks.

Fluor's award submittal to the AWB acknowledged that "the K Basins buildings are old and lighting is less than ideal. The water is so cloudy that workers use underwater cameras to see their work. The environment demands personal protective equipment that is bulky and restricts movement. Most tasks can be done only from high platforms, through extensive reaching over railings."

With the intent of reducing strains, sprains and "body mechanics" accidents and injuries, project management formed teams of managers, engineers, and operations employees to focus on what could be improved immediately. The teams worked to convert Brooks' observations and recommendations into cost effective and practical solutions.

"Project teams made inexpensive modifications to long-handled tools and changed the way equipment was positioned. Other tools and devices were revamped, making them adjustable, retractable, and adaptable. Handles of spray wands, for example, were reoriented so that workers' wrists would not tilt when they used the wands to decontaminate objects lifted out of the water. Air balance tools that pull down from the basin ceiling to manipulate fuel on underwater tables were fixed closer to where workers stood, and made adjustable for worker height and left or right handedness. A retractable hoist was added with special features for improved ergonomics, pendants controlling cranes were reworked, and lighting was improved."

The SNF Project's safety record was enviable, the AWB was told. Ergonomic improvements and cooperation between managers and employees…led to an improved OSHA-recordable case rate. The work also successfully protect[ed] the lives of thousands of families living along the long Columbia River corridor, stretching from Hanford to Portland and western Washington. (Note: OSHA stands for the federal Occupational Safety and Health Administration.)

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Denise Brooks, ergonomics specialist

The application for the award noted that the KBC Project contributes to Fluor Hanford's overall safety record. This past year, the company recorded its best site wide safety performance in nine years. Fluor Hanford has reduced the OSHA-recordable injury rate by more than 83 percent since taking over the contract.

Fluor Hanford's record compares favorably to that of utility companies, which experienced an average rate of 4.0 recordable injuries or illnesses for every 200,000 hours worked in 2003. Other industries tracked by OSHA include both aerospace and motor-vehicle manufacturing, with rates of 3.6 and 10.2, respectively, in 2003.

In addition, six Fluor Hanford projects, as well as the Fluor Government Group's Richland Office, have also achieved Star Status in the DOE's Voluntary Protection Program. Star status is awarded to projects and companies that consistently maintain injury and illness rates at least 50 to 75 percent better than the industry average.

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